

WHAT IS CLAIMED IS:

1. A process for the controlled delivery of intense heat in medical, veterinary procedures, or biological research laboratories comprising the steps of:
forming a mixture containing hydrogen and oxygen;
5 flowing the mixture through a conduit having a supply end and a delivery end;
reacting the mixture proximate to the delivery end to generate heat; and
applying the heat to tissue.
2. The process of claim 1 wherein the tissue comprises tissue selected from the group consisting of tumors, warts, cataracts, plaque, kidney stones, gallstones, dental tissue,
10 tonsils, adenoids, bone tissue, sarcomas, cartilaginous tissue, connective tissues, muscles, neurons, keratin cells, adipose tissue, cardiac tissue, intestinal tissue, pulmonary tissue, lymphoid tissue, and reproductive tissue.
3. The process of claim 1 wherein the heat removes a predetermined number of tissue layers.
- 15 4. The process of claim 1 wherein the heat cauterizes blood vessels.
5. The process of claim 4 further comprising the step of cutting the tissue.
6. The process of claim 5 wherein the tissue is cut using the heat.
7. The process of claim 5 wherein the tissue is cut using a cutting blade and then cauterized using the heat.
- 20 8. The process of claim 1 wherein the heat is used to cauterize neurological synaptic regions.
9. The process of claim 1 wherein the conduit has an effective diameter of less than 400 micrometers.
10. The process of claim 9 wherein the conduit has an effective diameter of about 200
25 micrometers.

11. The process of claim 1 further comprising the step of dissociating water to form hydrogen and oxygen, before the mixing step.
12. The process of claim 1 wherein the step of reacting the mixture is in the presence of a catalyst.
- 5 13. The process of claim 12 wherein the catalyst comprises at least one catalytic metal selected from the group consisting of scandium (Sc), titanium (Ti), vanadium (V), chromium (Cr), manganese (Mn), iron (Fe), cobalt (Co), nickel (Ni), copper (Cu), zinc (Zn), yttrium (Y), zirconium (Zr), niobium (Nb), molybdenum (Mo), technetium (Tc), ruthenium (Ru), rhodium (Rh), palladium (Pd), silver (Ag), cadmium (Cd),
10 hafnium (Hf), tantalum (Ta), tungsten (W), rhenium (Re), osmium (Os), iridium (Ir), platinum (Pt), gold (Au), mercury (Hg), and mixtures thereof.
14. The process of claim 1 wherein the step of reacting the mixture includes initiating the reaction.
15. The process of claim 14 wherein the initiation occurs by supplying heat or a spark.
- 15 16. The process of claim 1 further comprising the step of controlling the flow rates of the hydrogen and oxygen.
17. The process of claim 1 further comprising the step of controlling the ratio of hydrogen to oxygen in the mixture.
18. The process of claim 1 further comprising the step of controlling the flow rate of the
20 mixture.
19. The process of claim 18 wherein the flow rate is controlled by electrical power.
20. A process for the application of a thermoset material in tissue, comprising the steps of:

injecting a liquid thermoset material to a target;

inserting a conduit having a supply end and a delivery end, and a catalyst disposed proximate to the delivery end, wherein the delivery end is positioned proximate to the liquid thermoset material;

supplying a mixture of hydrogen and oxygen to the supply end of the conduit; and

5 flowing the mixture over the catalyst, thereby generating heat to cure the thermoset material.

21. The process of claim 20 wherein the conduit has an inner diameter less than 400 micrometers.

22. The process of claim 21 wherein the conduit has an inner diameter less than 200
10 micrometers.

23. The process of claim 20 wherein the application of the thermoset material is a thermoset glue or thermoset resin used for bonding portions of bones.